KEEPER of the FAITH

Richard Stallman is leading a crusade to preserve your programming freedom.

Jay Fraser, Associate Editor

Photography by Kevin Bryan

"We've come here today to warn the public of the terrible harm Lotus and other companies are doing to the software industry," shouted the intense man with the long, tangled, black hair.

The crowd of about 300 people cheered and applauded.

"We can win. We're going to have to work hard and get lots of other people to join with us, but we can do it," he went on.

Again the crowd cheered and waved signs reading "Stop Software Monopolies," "Lotus Interruptus," and "A Real Company Competes. Wimps Sue!"

This protest rally took place on August 2 in Cambridge, MA at the headquarters of Lotus Development Corp. Lotus was targeted because two months earlier it had won a lawsuit against Paperback Software International of Berkeley, CA for copyright infringement. Lotus claimed Paperback's VP Planner illegally imitated the commands and user interface of its popular 1-2-3 spreadsheet. The people at the rally viewed Lotus's suit as an attack on programmers' traditional freedom to write programs that are compatible with existing software.

"There are people here from New Hampshire and Maryland and from companies all around the Boston area. It makes me think of the Minutemen," the man shouted. "So let this be the shot heard round the world!"

The crowd cheered once more.

"Now let's spend the rest of the afternoon marching around the Lotus building chanting our hex chant," he said, finishing his speech.

A picket line formed on the sidewalk and began a chant based on the hexadecimal counting system.

"1-2-3-4 Kick the lawsuits out the door!

5-6-7-8 Innovate don't litigate!

9-A-B-C Interfaces should be free!
D-E-F-0 Look and feel has got to go!"

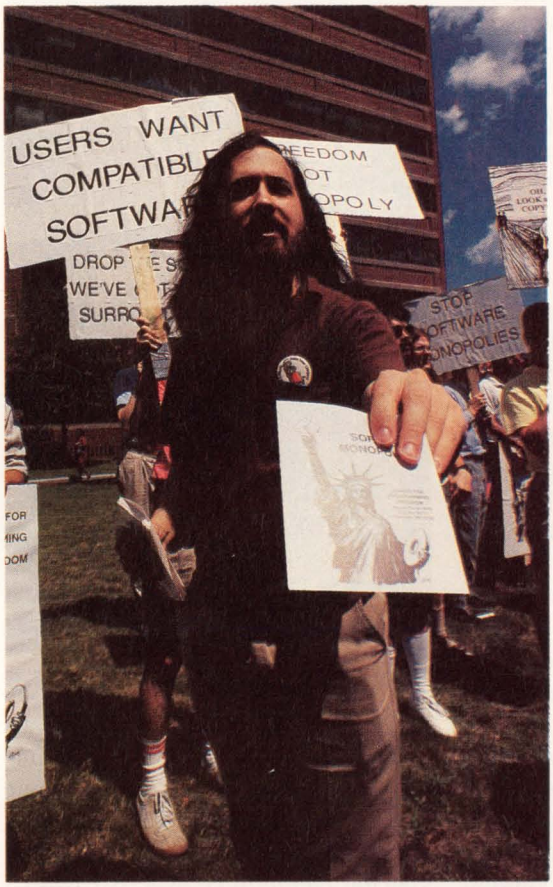
The speaker at the rally was Richard Stallman, 37, a gifted programmer and tireless crusader for the freedom of anyone who writes or uses software. He is the founder of the Free Software Foundation (FSF) and cofounder and president of the League for Programming Freedom.

Stallman spends most of his time in a cluster of cramped offices near MIT (Cambridge, MA). The floors and furniture are strewn with last week's newspapers, empty Chinese food take-out cartons, and paperback science fiction novels. Stallman himself looks like he never left the late 1960s. For an interview he's barefoot. His unruly hair falls halfway down his back. And he wears a loose, unbleached cotton shirt with a button pinned on it that reads "Keep Your Lawyers Off My Computer!"

Stallman clears a space on a couch, sits down, and folds his legs under him. As he talks about programming freedom he speaks calmly, but with the same intensity he displayed at the rally.

"Any kind of monopoly on any activity is automatically an affront to individual freedom," he says, "and those things can only be justified when there's a public gain that's worth the price. I totally reject the idea that people are entitled to be paid whenever anyone benefits from something they have done. And, by the way, the American legal system also rejects that idea. There is no basis for it except in right-wing ideology.

"The Constitution, when it establishes the basis for patents and copyrights, says very clearly that they are not an entitlement," he adds. "They are something that can be established to promote progress. In other words, they are a means of altering the behavior of the public for the public good. They are not a matter of fairness. No one is entitled to a patent, independent of whether the government sees fit to establish them."



Stallman discovered the world of programming when he was 12 years old. At summer camp he came across a computer manual that belonged to one of the counselors. There were no computers at the camp, but that didn't deter him. Stallman devoured the book and began creating programs in his mind. He has been hooked ever since.

While he was in high school Stallman wrote programs for IBM. He went to Harvard University (Cambridge, MA) and graduated with a BS in physics in 1974. By then he was already working at the Artificial Intelligence Laboratory at MIT.

The 1970s were the glory years of the AI Lab. A group of programmers who would become legendary gathered there under the extremely loose supervision of Professor Marvin Minsky, known as the father of artificial intelligence. These hackers, as they proudly called themselves, explored the outer limits of what computers could do. Steven Levy wrote of them in his book *Hackers: Heroes of the Computer Revolution*: "Beneath their often unimposing exteriors, they were adventurers, visionaries, risk-takers, artists . . . and the ones who most clearly saw why the computer was a truly revolutionary tool."

The hackers in the AI Lab produced everything from elegantly written languages to sophisticated computer games to the powerful LISP (List Processing) machine, the AI programmer's dream computer. Something else came out of the AI Lab, too—the hacker ethic. The hacker ethic was never codified or published or even written down. It evolved naturally from the temperaments and convictions of the people in the Lab, and it permeated the way they worked.

The hacker ethic is based on unlimited freedom of information and unhindered cooperation. If someone writes a program, the hackers believed, anyone else should be free to modify or expand it. In that way, programs will be refined and improved until the best possible version is created, and that program should also circulate freely. Working this way will prevent duplication of effort, promote creativity, and raise the level of programming for everyone.

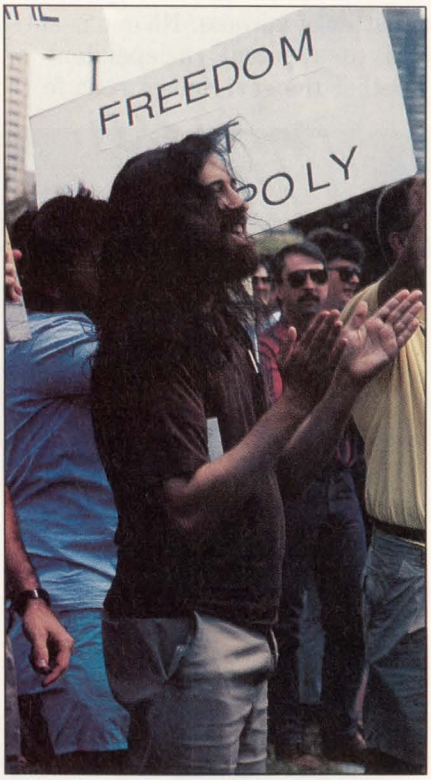
Richard Stallman is a true believer in the hacker ethic. While he was working at the AI Lab, he wrote a text-editing program called EMACS. He deliberately created it with an open architecture to encourage changes and additions, and he gave it away free as long as the people who received it promised to send him any improvements they made.

The development of the LISP machine eventually destroyed the original AI Lab. When a prototype of the computer was completed in 1979, the hackers who had worked on it agreed that they should start a company to manufacture and sell it. But they disagreed on what form the company should take. One faction wanted a small, loose-knit organization that operated in the same communal way as the AI Lab. The other faction wanted a larger, more conventionally structured firm with a professional management team brought in to take care of business matters. The two sides couldn't reach a compromise. They started different companies, LISP Machine Inc and Symbolics, and each came out with its own version of the LISP machine in the early 1980s.

The deep wound in the AI Lab never healed. What had once been a family eventually became two rival camps. The free flow of information stopped. Many of the hackers who remained were hired away by one company or the other. Work in the Lab practically ceased. The golden era was over.

Richard Stallman was the last of the original hackers to remain in the AI Lab. He was depressed and angered by its disintegration. He wasn't interested in going to work for someone else and he still held firmly to the hacker ethic, so there was only one thing for him to do.

"I decided that it wasn't worth continuing in the software field without being able to cooperate with people and to write and improve whatever program you want to improve," he says. "I decided that I would make a new software-sharing community even if I had to write all the software myself."



Early in 1984 Stallman resigned from MIT and founded the FSF. The goal of the organization is to develop a complete, Unix-compatible software system (called GNU for Gnu's not Unix) and give it away. The reason Stallman severed his ties with MIT was to make sure it would have no legal right to the software he intended to write.

The FSF has no members, just volunteers. It exists mainly on donations of money and equipment. Most of the money goes to hire programmers and technical writers. Stallman says the FSF has considerable support on campuses across the country and within the computer industry. For example, Hewlett-Packard recently donated $100,000 and six of its 68030 workstations to the FSF.

Approximately two-thirds of GNU has been written and parts of it have already been distributed. In order to make sure that GNU programs circulate freely, Stallman has protected them with what he calls a "copyleft." A copyleft is a legal instrument that gives people the freedom to change and distribute GNU programs at will, but prevents anyone from trying to copyright and sell or license a modified version.

"People have the opportunity to join into cooperation," says Stallman, "but once they've decided to join into cooperation they can't turn around and start being uncooperative with somebody else. So all the improvements people make sort of add together and add together, making a constantly growing and constantly improving body of software."

Stallman's skills as a programmer could have made him wealthy a long time ago. Instead he has chosen to earn just enough money from consulting work to get by on and to live an almost ascetic lifestyle. Recently, however, he was given $240,000 to use in any way he wants.

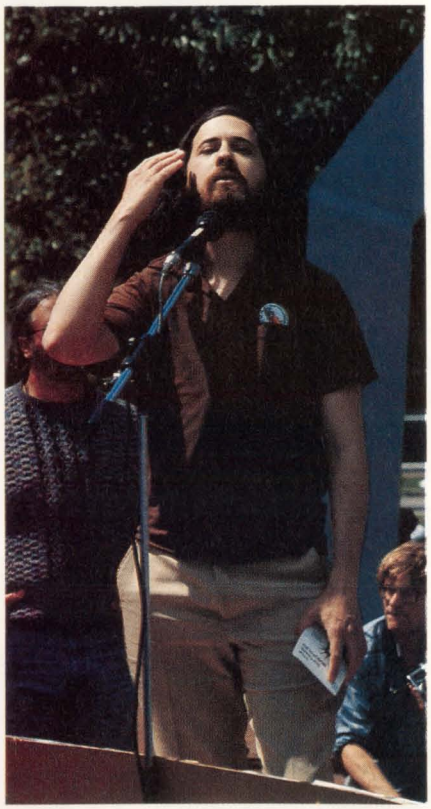
On July 17 the MacArthur Foundation in Chicago, IL announced that Stallman had been awarded a "genius fellowship" of $240,000. These grants are given to, in the words of the Foundation, "exceptionally gifted individuals" to free them from economic constraints so they can devote themselves full-time to their pursuits.

Stallman is pleased with the grant and a little amused by it. "The money by itself doesn't really change anything for me," he says. "I'm not materialistic in the way a lot of Americans are, wanting as many possessions as possible. What I want is to be as far away from any worries about a shortage of money as possible."

Stallman hasn't decided what he's going to do with the money yet. He may use some of it to support programmers he knows. He may use some to learn how to play Indonesian gamelan music. The only thing he has definitely decided on is to travel to the Soviet Union to accept an invitation to speak about free software.

Recently, much of Stallman's time and effort have gone into fighting the attempts of some companies to monopolize common user interfaces through copyrights. The demonstration in front of Lotus's headquarters was a protest against this new and controversial practice.

The case of Lotus vs Paperback Software was very important because although Paperback's program used a different code than that in Lotus 1-2-3, many of its commands and keystrokes were the same. Because of this similarity of "look and feel" the judge ruled that



Lotus's copyright had been violated. After its victory in court, Lotus immediately filed suit against two more small software companies. Also, Apple Computer is now suing Microsoft and Hewlett-Packard, alleging that those companies violated its copyright on the Macintosh computer interface. Stallman and others believe that a very dangerous precedent has been set.

"Restrictions like these can easily wipe out meaningful competition," says Stallman. "User interface copyrights can make it nearly impossible to compete with an established, standard product, because the users all know a certain set of commands. If you can't implement those commands, they won't want to relearn to switch brands.

"Imagine what it would be like for someone to try to make a typewriter with the keys arranged in a funny layout," he explains. "You can see what that would be like—utter havoc. The point is that people probably wouldn't even bother trying because it's so obviously not feasible."

In Stallman's eyes, another equally serious threat to software developers' freedom is software patents. The US Patent Office began granting patents on software in 1981. Thousands of them have been issued so far, and they cover many common and widely used functions.

"Natural-order recalc" is just one example. This feature recalculates all of the entries in a spreadsheet when a user changes one. It's now covered by a patent. If someone wishes to incorporate it into a program, he either has to pay a licensing fee or risk a lawsuit. Most programmers don't realize how many common techniques are now restricted by patents, and being unaware that a patent exists is no excuse before the law. You can still be sued.

The proliferation of patents could make writing software ruinously expensive. Software developers would have to license patents from dozens or even hundreds of holders. That alone would be costly. But to find out which patents might be infringed, developers also would have to conduct patent searches.

"If you wanted to write a program, say 50,000 lines long, you

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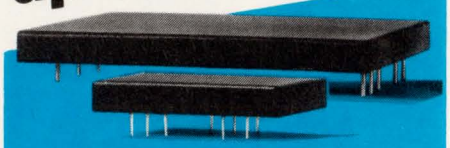

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might have in that program 100,000 basic components," says Stallman. "You'll have hundreds of techniques. You can have thousands of combinations of techniques that actually are meaningful associations. If you wanted to do a patent search for those it would cost you two or three thousand dollars each. Now you're talking about millions of dollars.

"And this would only enable you to find out what was patented, so you wouldn't use it," he adds. "That doesn't mean there'd be any other way to do things, and it doesn't mean that you can be sure. Whenever anybody's wrong there's a lawsuit that costs maybe half a million."

Beyond the issue of the sharply increased costs they would create, software patents and user-interface copyrights also strike right at the heart of everything Stallman cherishes most—the hacker ethic of cooperation, sharing, and a free flow of information.

To combat these threats, Stallman and two friends founded the League for Programming Freedom in October of 1989. In less than a year and with limited publicity the League has grown to 150 dues-paying members. Stallman receives about 20 letters each day seeking information about it.

"The League is an organization of programmers and users of computers who want to reverse the new monopolies that have recently been instituted—the user-interface copyrights and software patents," says Stallman. The League is growing rapidly "because people who didn't take the threat seriously now know that we can't expect the courts to understand the software field or respect the traditions of the field. People know it's up to them to solve the problem."

Stallman is guardedly optimistic about the future. "There's a good chance but not a great chance that the Supreme Court will overturn the lower court's decision," he says. The trend toward more software patents could also be reversed by other means. "It would be easy to reverse it. Congress could pass a law that patents don't apply to software," he explains. "The problem is that the few people who have something to gain from software patenting may be better organized and more aware of it than the many who have something to lose."

Is Richard Stallman making a futile attempt to recapture a lost utopia, or is he fighting a very important battle that he just might win? Time will answer those questions. Meanwhile he can usually be found in his cluttered office, writing programs for his free software system, answering inquiries about the FSF, and planning ways to mobilize public opinion in favor of programming freedom, still keeping the faith.

Article Interest Quotient
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WHAT'S COMING IN EDN

EDN's October 11, 1990, issue will feature a staff-written Special Report on video A/D converters. Part 3 of the real-time software programming series will discuss requirements models for formulating operating-system behavior. And EDN's DSP-chip directory will provide detailed descriptions of many DSP products.